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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

*Ex parte* HAROLD N. ROSENSTOCK, RICHARD DYKIEL,
RICHARD LAGUEUX, and PETER DUTHIE

Appeal 2009-010897
Application 10/676,744
Technology Center 2400

Before JAY P. LUCAS, THU A. DANG,
and JAMES R. HUGHES, *Administrative Patent Judges.*

DANG, *Administrative Patent Judge.*

DECISION ON APPEAL

## I. STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-42. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

## A. INVENTION

Appellants' invention relates to a method and apparatus for selecting a limited number of standby subnet managers for an InfiniBand architecture subnet having a plurality of nodes; wherein, each of the plurality of nodes, includes a subnet manager that is selected according to a priority value, and a globally unique identifier (GUID) (Abstract).

## B. ILLUSTRATIVE CLAIM

Claim 1 is exemplary:

1.    A method, comprising:

providing an INFINIBAND architecture subnet having a plurality of nodes, wherein each of the plurality of nodes has a priority value and a globally unique identifier;

providing a subnet manager within each of the plurality of nodes;

ranking each of the plurality of nodes according to the priority value and the globally unique identifier; and

selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes.

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## C. REJECTION

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

| Rooney | US 6,519,660 B1 | Feb. 11, 2003 |
| Frazier | US 6,941,350 B1 | Sep. 6, 2005 |
| | | (Filed Oct. 19, 2000) |

"InfininBand™ Architecture Specification Volume 1 Release 1.1", InfiniBand Trade Association, November 6, 2002, Pages 1-35, 54-57, 61-80, 89-90, 121-124, 628-632, 682-684, 706, 758-768, 826 ("InfiniBand Architecture (IBA) Specification").

Claims 1-3, 6-9, 11-13, 29-31, 34-37 and 39-41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Frazier in view of IBA Specification.

Claims 4, 5, 10, 14, 32, 33, 38, and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Frazier in view of IBA Specification and Rooney.

Claims 15-17, 20-23, and 25-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Frazier.

Claims 18, 19, 24, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Frazier in view of Rooney.

## II. ISSUE

The dispositive issue before us is whether the Examiner has erred in determining that the combination of Frazier and InfiniBand teaches or would have suggested "providing a subnet manager *within each* of the plurality of *nodes*" and "selecting if the *subnet manager* is included in a set of standby

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subnet managers *based on the priority value and the globally unique identifier of each of the plurality of nodes*" (claim 1, emphasis added).

## III. FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

### *Frazier*

1.    Frazier discloses a method within a network computing system for selecting a master network manager; wherein, the system uses a priority scheme to determine which of the potential subnet managers has the highest priority and therefore actually becomes the master subnet manager over the subnet (Abstract; col. 10, ll. 7-38).

2.    When the priority of two subnet managers is equal, the system determines which subnet manager possesses the lowest GUID to determine which subnet manager will win the arbitration (*id.*).

3.    Specifically, upon initialization, a subnet manager enters a discovering state S1 and sends requests to the network computing system to discover other nodes within the network computing system by polling all other subnet managers for information such as priority and GUID (col. 11, ll. 24-45).

4.    The requesting subnet manager shifts to a standby state S2 when a master subnet responds or a subnet manager responds with a higher priority (col. 11, ll. 49-51).

5.    The requesting node shifts to a master mode if there are no other higher priority nodes and the requesting node has completed checking

all other nodes in the network computing system (Abstract; col. 12. ll. 20-23).

6.     When a master subnet manager determines that there are too many active standby subnet managers, it will send a disable message to the standby subnet manager to change it from an active state S2 to a non-active state S3 (col. 11, ll. 51-53 and col. 12, ll. 16-19).

7.     Large systems include hundreds or thousands of nodes; wherein these complex systems typically include redundancies, including backup subnet managers which take over when the primary subnet manager fails (col. 10, ll. 13-17).

*InfiniBand Architecture (IBA) Specification*

8.     The IBA Specification discloses an InfiniBand architecture subnet as an interconnect technology for interconnecting processor nodes and I/O nodes to form a system area network (SAN); wherein, the architecture supports complex system area networks consisting of multiple independent and clustered hosts and I/O components (§ 1.2.3-1.3; p. 55-56).


IV. ANALYSIS

*Claims 1-3, 6-9, 11-13, 29-31, 34-37, and 39-41*

Appellants do not provide a separate argument with respect to independent claims 1 and 29 (App. Br. 6-8).  Appellants do not provide arguments with respect to dependent claims 2, 3, 6-9, 11-13, 30, 31, 34-37, and 39-41.  Accordingly, we select claim 1 as being representative of the claims.  *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellants contend that Frazier does not teach "selecting if the subnet manager is included in a set of standby subnet managers based on the

priority value and the globally unique identifier of each of the plurality of nodes;" rather, Frazier "appears to disclose determining which of a set of subnet mangers has the highest priority and making that subnet manager the active subnet manager" (App. Br. 7). Appellants argue that Frazier "discloses communication between a subnet manger and subnet management agents in each node" which "is not the same as providing each of the plurality of nodes with a subnet manager" (*id.*). Appellants contend further that "Frazier teaches away from including a subnet manger in each of the plurality of nodes," because it discloses that 'hundreds or thousands' of nodes that may be present in its disclosed SAN network" and "including 'hundreds or thousands' of subnet mangers … is impractical" (App. Br. 8).

However, the Examiner finds that Frazier discloses that "the nodes not selected to be the master subnet manager are set to a standby state;" therefore, "a determination of a master node [based upon priority or GUID] from a group active subnet managers [as disclosed in Frazier] is the creation of a set of standby subnet managers" (Ans. 16). The Examiner finds further that "[c]learly if the systems of Frazier 'typically include redundancies,' it would not be impractical and would in fact be reasonable to suggest that each node could be provided with a subnet manager for redundancy purposes as outlined in the rejection" (Ans. 17).

In Reply Brief, Appellants contend that "the Examiner's response to the argument confuses selecting a master subnet manager with selecting a set of standby subnet managers as claimed," since "the selection of a master subnet manager is a separate and distinct step from the selection of the set of standby subnet managers" (Reply Br. 2).

To determine whether the combined teachings of Frazier and IBA Specification teaches or would have suggested a method including the steps of "providing a subnet manager within each of the plurality of nodes" and "selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes" as recited in claim 1, we give the claim its broadest reasonable interpretation consistent with the Specification. *See In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997). However, we will not read limitations from the Specification into the claims. *In re Van Geuns*, 988 F.2d 1181, 1184 (Fed. Cir. 1993).

Claim 1 does not place any limitation on what "a set" means, includes, or represents. Thus, we give "selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes" its broadest reasonable interpretation as selecting whether a subnet manager is included in a group of *any* size based upon priority and GUID as consistent with the Specification and as specifically defined in claim 1.

Frazier discloses a method within a network computing system for selecting a master network manager; wherein, the system uses a priority scheme to determine which subnet manager has the highest priority and therefore assumes the role as master subnet manager (FF 1). Accordingly, the subnet manager possessing the *lower priority* ranking is designated as a *standby* subnet manager (FF 3 and 4). When the priority of two subnet managers is equal, the system compares the GUID to determine which subnet manager will win the arbitration (FF 2). Specifically, upon initialization, a subnet manager enters a discovering state S1 and sends

requests to the network computing system to discover other nodes within the network computing system by polling all other subnet managers for information such as priority and GUID (FF 3). The requesting subnet manager *shifts to a standby state S2* when a master subnet responds or another subnet manager *responds with a higher priority* (FF 4). The requesting node shifts to a master mode if there are no other higher priority nodes and the requesting node has completed checking all other nodes in the network computing system (FF 5). The master subnet manager *limits the number of active standby subnet managers* that will be included within the group (FF 6).

We find that the selection of which subnet manager will be a standby subnet manager using priority or GUID represents the selection of a subnet manager to be included within a group based upon priority or GUID (FF 1-6). We find further that the limiting of the active subnet managers represents *the set or group* of standby managers chosen based upon priority or GUID (FF 6). Thus, we find that "selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes" reads on Frazier's priority scheme.

Frazier further discloses that large systems including hundreds or thousands of nodes typically include redundancies including backup subnet managers (FF 7). We find that the redundant backup subnet managers included within on a large number of nodes *at least suggests* including a subnet manager within each of the plurality of nodes.

In addition, the IBA Specification discloses an InfiniBand architecture subnet as an interconnect technology for interconnecting a multiplicity of independent processor nodes and I/O nodes (FF 8).

In view of our claim construction above, we find that the combination of Frazier and IBA Specification *at least suggests* providing an InfiniBand architecture subnet that employs both steps of "providing a subnet manager within each of the plurality of nodes" and "selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes," as specifically required by claim 1.

Though Appellants also contend that the combination "teaches away" from providing a subnet manager within each of the nodes (App. Br. 8), our reviewing court has held that "'[a] reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.'" *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l., Inc.,* 73 F.3d 1085, 1090 (Fed. Cir. 1995) (quoting *In re Gurley,* 27 F.3d 551, 553 (Fed. Cir. 1994)).

We agree with the Examiner, however, that Appellants' support for *a direction divergent* from the claimed invention regarding "impractical[ity]" of inclusion of a subnet manager at each node is merely "asserted by Appellants" and *not* disclosed in Frazier (App. Br. 8; Ans. 17). The issue here is not whether Frazier discloses a subnet manager within each node but rather whether a person of ordinary skill, upon reading Frazier, would be discouraged from including a subnet manager at each node. Accordingly, we do not find support for a direction divergent disclosed in Frazier.

The Supreme Court has stated that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Thus, we find no error in the Examiner's finding that the combination of Frazier's method which uses a priority scheme to select a subnet manager from to be included within a group of active standby subnet managers with an InfiniBand architecture subnet having multiple independent nodes, as disclosed in the IBA Specification, produces the steps of "providing a subnet manager within each of the plurality of nodes" and "selecting if the subnet manager is included in a set of standby subnet managers based on the priority value and the globally unique identifier of each of the plurality of nodes" which would be obvious (Ans.5; FF 1-6).

Accordingly, we find that Appellants have not shown that the Examiner erred in rejecting independent claims 1 under 35 U.S.C. § 103(a) over Frazier in view of the IBA Specification and independent claim 29 and claims 2, 3, 6-9, 11-13, 30, 31, 34-37, and 39-41 depending from claims 1 and 29 which have been grouped therewith.

*Claims 4, 5, 10, 14, 32, 33, 38, and 42*

Appellants similarly argue that "[c]laims 1 and 29 distinguish over Frazier and IBA Specification" from which claims 4, 5, 10, 14, 32, 33, 38, and 42 respectively depend (App. Br. 8). As discussed *supra* with respect to claims 1 and 29, we find no deficiencies in the Examiner's finding that the combined teaching of Frazier and InfiniBand at least suggests the claimed features.

Thus, we conclude that the Examiner did not err in rejecting claims 4, 5, 10, 14, 32, 33, 38, and 42 depending respectively from claims 1 and 29 under 35 U.S.C. § 103(a) over Frazier in view of InfiniBand and Rooney.

### *Claims 15-17, 20-23, and 25-27*

As to claim 15, Appellants similarly argue that claim 15 includes "limitations that correspond to the limitations described in regard to [c]laims 1 and 29" (App. Br. 9). As discussed *supra* with respect to claims 1 and 29, we find no deficiencies in the Examiner's finding that Frazier at least suggests the claimed features.

Thus, we conclude that the Examiner did not err in rejecting claim 15 and claims 16, 17, 20-23, and 25-27 depending respectively from claim 15 under 35 U.S.C. § 103(a) over Frazier.

### *Claims 18, 19, 24, and 28*

Appellants similarly argue that "[c]laims 18, 19, 24 and 28 [rely] upon the rejection of [c]laim 15 combined with the Rooney reference" (App. Br. 9). As discussed *supra* with respect to claim 15, we find no deficiencies in the Examiner's finding that Frazier at least suggests the claimed features.

Thus, we conclude that the Examiner did not err in rejecting claims 18, 19, 24, and 28 depending from claim 15 under 35 U.S.C. § 103(a) over Frazier in view of Rooney.


## V. CONCLUSION AND DECISION

The Examiner's rejection of claims 1-42 under 35 U.S.C. § 103(a) is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

<u>AFFIRMED</u>

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